

CLAIMS

What is claimed is:

1. An exercise machine comprising:
 - a support structure;
 - 5 a resistance assembly connected to the support structure;
 - a drive member having an output point from which force is applied to the resistance assembly and an input point which is spaced from the output point by a distance L; and
 - 10 at least one handle acting on the drive member at the input point and which a user can engage and move, in a continuous, load-exerting manner, against a resistance force generated by the resistance assembly.
2. The exercise machine according to claim 1, wherein said at least one handle comprises one handle with which one hand of the user is engageable.
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3. The exercise machine according to claim 1, wherein the at lease one handle is such that two hands of the user are engageable therewith.
4. The exercise machine according to claim 1, wherein the user's arms act in unison on the handle against the resistance force.
- 20 5. The exercise machine according to claim 1, wherein the input point is movable along a path which forms a closed loop.

6. The exercise machine according to claim 5, wherein the path is a defined circular path.
7. The exercise machine according to claim 5, wherein the closed loop lies in a substantially vertical plane.
- 5 8. The exercise machine according to claim 5, wherein the shape of the closed loop is dynamically variable.
9. The exercise machine according to claim 1, further comprising at least one member which is adjustable to vary the distance L.
10. The exercise machine according to claim 9, wherein the at least one member is adjustable against a biasing element.
11. The exercise machine according to claim 9, further comprising a releasable fastener acting on the at least one member for preventing the distance L from varying after adjustment.
12. The exercise machine according to claim 9, wherein the at least one member is rotatable by the handle about the output point.
- 15 13. The exercise machine according to claim 5, wherein the at least one handle includes grips for the user's hands, the grips being positioned so that the user's hands, when engaged with the grips, extend around a common axis which is transverse to the closed loop.
- 20 14. The exercise machine according to claim 5, further comprising an input axis which is transverse to the closed loop and which extends through the input point, wherein the at least one handle includes grips for the user's hands which are positioned on respective opposed sides of of said input axis.

15. The exercise machine according to claim 14, wherein the grips are rotatable in unison about the input axis.
16. The exercise machine according to claim 1, wherein the support structure extends upwardly and includes a base which is attachable to a floor to stabilise the support structure during use.
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17. The exercise machine according to claim 1, wherein the support structure extends upwardly and includes formations for attaching the support structure to a wall to stabilise the support structure machine during use.
- 10 18. The exercise machine according to claim 1, wherein the support structure extends upwardly, the exercise machine further comprising a base attached to a lower end of the support structure and providing a platform upon which the user stands so that the user's mass stabilises the support structure during use thereof.
- 15 19. The exercise machine according to claim 6, wherein the circular path has a highest point which is a distance X above a ground reference level on which the user stands and a lowest point which is a distance Y above the ground reference level and wherein $X \geq 2Y$.
- 20 20. The exercise machine according to claim 1, wherein the support structure has two upwardly extending supports, the resistance assembly being mounted to at least one of the supports, and includes a base which interconnects lower ends of the supports and forms a platform upon which the user stands.
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21. The exercise machine according to claim 20, wherein the supports are pivotally movable towards, and away from, each other.
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22. The exercise machine according to claim 20, wherein the base includes a plurality of pivotally interconnected panels.
- 5 23. The exercise machine according to claim 20, wherein the resistance assembly includes a flywheel which is rotatable about an axis disposed near upper ends of the supports.
- 10 24. The exercise machine according to claim 20, wherein the drive member is adjustable to vary the distance L.
- 15 25. The exercise machine according to claim 24, wherein the handle includes an elongate shaft extending transversely from the drive member, said elongate shaft being of sufficient length to provide grips for the user's hands.
- 20 26. The exercise machine according to claim 1, further comprising a drive arrangement which is connected to the drive member at the output point, and which is connected directly or indirectly to the resistance assembly, said drive arrangement increasing the force generated by the resistance assembly and presented to the drive member.
- 25 27. The exercise machine according to claim 26, wherein the resistance assembly includes a flywheel and the input point is movable along a circular path, the drive arrangement being such that the ratio of the rotational speed of the flywheel to the rotational speed of the drive member around the input point is greater than 20.
28. The exercise machine according to claim 1, further comprising a unidirectional drive device for transferring force from the input point to the resistance assembly.
- 25 29. The exercise machine according to claim 1, wherein the resistance assembly includes a flywheel and a brake which acts on the flywheel

and is adjustable to exert an adjustable braking force restraining rotational movement of the flywheel.

30. In combination, first and second exercise machines, each exercise machine being according to claim 1, the exercise machines being positioned so that the support structure of the first exercise machine is spaced from and opposes the support structure of the second exercise machine, with the handle of the first exercise machine being at a selected angular position relatively to the handle of the second exercise machine.
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31. The combination of claim 30, wherein the resistance assembly of the first exercise machine comprises the resistance assembly of the second exercise machine.
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32. The combination of claim 30, wherein the handles are at the same angular orientation and are connected directly to each other.
33. The combination of claim 30, wherein the handles are spaced from each other and form a gap between them which accommodates a user who can grip one handle with one hand and the other handle with the other hand.
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34. An exercise machine comprising:
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a base for providing a platform for a user during use;

a support structure extending upwardly from the base;

a drive member having an input point and an output point and being connected to the support structure;

a resistance assembly connected to the output point; and

a handle connected to the input point, wherein a user on the platform can grip the handle with two hands and rotate the handle about the output point against a resistance force which is generated by the resistance assembly.

- 5 35. The exercise machine according to claim 34, wherein the drive member has a length that is adjustable to vary a distance between the input point and the output point, the drive member being rotatable about an axis which passes through the output point, the resistance assembly having a flywheel which is rotatable by rotational movement
10 of the drive member.
36. The exercise machine according to claim 35, further comprising a brake for acting on the flywheel and is adjustable to exert an adjustable braking force for restraining rotational movement of the flywheel.
- 15 37. The exercise machine according to claim 35, further comprising a unidirectional drive device for transferring force from the input point to the resistance assembly.
- 20 38. The exercise machine according to claim 35, wherein the support structure includes upwardly extending supports pivotally movable relatively to each other, and the base includes a plurality of panels which are connected to lower ends of the supports.
39. The exercise machine according to claim 38, wherein the resistance assembly is mounted to at least one of the supports.
- 25 40. The exercise machine according to claim 35, further comprising a drive arrangement between the output point and the flywheel to increase the rotational speed of the flywheel relatively to the rotational speed of the drive member.

41. An exercise machine comprising:
- a support structure;
- a resistance assembly connected to the support structure;
- 5 a drive member having an output point from which force is applied to the resistance assembly and an input point spaced from the output point; and
- 10 at least one user engaged handle for acting on the drive member at the input point against a resistance force generated by the resistance assembly, the input point being movable along a path which forms a closed loop having a highest point which is a distance X above a ground reference level on which the user stands and a lowest point which is a distance Y above the ground reference level and wherein $X \geq 2Y$.
42. An exercise machine comprising:
- 15 a support structure;
- a resistance assembly connected to the support structure for generating a resistance force;
- 20 a drive member having an output point from which force is applied to the resistance assembly and an input point spaced from the output point; and
- a user engaged movable handle acting on the drive member at the input point, wherein the user's arms act in unison against the resistance force which is generated by the resistance assembly.

43. An exercise machine comprising:

a support structure;

a resistance assembly connected to the support structure for generating a resistance force;

5 a drive member having an output point from which force is applied to the resistance assembly and an input point spaced from the output point;

at least one user engaged movable handle acting on the drive member at the input point and against the resistance force; and

10 a base attached to a lower end of the support structure and which provides a platform upon which the user stands so that the user's mass stabilises the support structure during movement of the handle.

44. An exercise machine comprising:

a support structure;

15 a resistance assembly connected to the support structure for generating a resistance force;

a drive member having an output point from which force is applied to the resistance assembly and an input point spaced from the output point; and

20 at least one handle which acting on the drive member at the input point and which a user can engage and move against the resistance force generated by the resistance assembly, the input point being movable along a path which lies in a substantially vertical plane, the

handle being positioned so that it can be engaged by a user in at least one of the following positions: a position in which the user is adjacent the path and generally faces the vertical plane, and a position in which the user is adjacent the path and generally faces in a direction which is substantially parallel to the plane.

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45. A handle arrangement for inputting force to an exercise machine comprising;

a cross piece;

10 a pivotally movable joint located on a centre line through the cross piece; and

first and second hand grips on or connected to the cross bar on opposed sides of the centre line.

- 15 46. The handle according to claim 45, further comprising a connector positioned on the centre line for allowing at least the cross piece to be rotated about the centre line.